

CLAIMS:

1. A side airbag apparatus used in a vehicle,  
comprising:

an airbag;

an inflator, wherein the inflator supplies gas to the  
airbag, thereby inflating and deploying the airbag between a  
body side portion of the vehicle and a seat located in the  
passenger compartment of the vehicle; and

a limited thickness portion, wherein, when the airbag is  
inflated and deployed, the limited thickness portion limits  
the inflation of the airbag such that the thickness of a  
portion of the airbag corresponding to an elbow portion of an  
occupant on the seat is less than the thickness of the  
remainder of the airbag with respect to the measurement  
between the occupant and the body side portion, and wherein  
the airbag includes an inflation portion that entirely  
surrounds the limited thickness portion and is inflated with  
gas from the inflator.

2. The side airbag apparatus according to claim 1,  
wherein the airbag is provided in a part of a backrest of the  
seat that faces the side body portion, wherein the airbag is  
deployed frontward in a traveling direction of the vehicle and  
is inflated in a space between the body side portion and an  
occupant for protecting at least the lumbar region and the  
chest among the lumbar region, the chest, the shoulders, and  
the head of the occupant.

3. The side airbag apparatus according to claim 2,  
wherein the inflation portion includes a narrow portion,  
wherein, when the airbag is deployed, the narrow portion is  
located below the limited thickness portion and frontward in  
the traveling direction of the vehicle with respect to the  
limited thickness portion, and wherein the narrow portion is

arcuate as viewed from a side of the vehicle and has a substantially constant width.

4. The side airbag apparatus according to claim 1,  
5 wherein the airbag is provided in a part of a seat portion of the seat that faces the side body portion, and wherein the airbag is deployed upward in the passenger compartment and is inflated in a space between the body side portion and an occupant for protecting at least the lumbar region and the  
10 chest among the lumbar region, the chest, the shoulders, and the head of the occupant.

5. The side airbag apparatus according to claim 1,  
wherein the limited thickness portion is formed by sewing  
15 facing portions of the airbag to each other with a reinforcing fabric sheet in between.

6. The side airbag apparatus according to claim 1,  
wherein the limited thickness portion is one of a plurality of  
20 limited thickness portions, wherein the airbag has a plurality of gas passages, and wherein each gas passage is located between an adjacent pair of the limited thickness portions.

7. The side airbag apparatus according to claim 1,  
25 wherein the limited thickness portion is circular.

8. The side airbag apparatus according to claim 1,  
wherein the limited thickness portion is located at a position that is outside a mainstream of gas injected by the inflator.  
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9. The side airbag apparatus according to claim 8,  
wherein the inflator injects gas in a horizontal direction.

10. The side airbag apparatus according to claim 9,  
35 wherein the limited thickness portion is located above or

below a mainstream of gas injected by the inflator.

11. A side airbag apparatus used in a vehicle,  
comprising:

5           an airbag;

          an inflator, wherein the inflator supplies gas to the  
airbag, thereby inflating and deploying the airbag between a  
body side portion of the vehicle and a seat located in the  
passenger compartment of the vehicle; and

10           a limited thickness portion, wherein, when the airbag is  
inflated and deployed, the limited thickness portion limits  
the inflation of the airbag such that the thickness of a  
portion of the airbag corresponding to an elbow portion of an  
occupant on the seat is less than the thickness of the  
15 remainder of the airbag with respect to the measurement  
between the occupant and the body side portion, and wherein  
the airbag includes an inflation portion that entirely  
surrounds the limited thickness portion and is inflated with  
gas from the inflator, and wherein the inflation portion has a  
20 chest protecting portion for protecting the chest of an  
occupant, a lumbar region protecting portion for protecting  
the lumbar region of an occupant, and a narrow portion for,  
together with the limited thickness portion, protecting the  
elbow portion of an occupant.

25           12. The side airbag apparatus according to claim 11,  
wherein the airbag is provided in a part of a backrest of the  
seat that faces the side body portion, wherein the airbag is  
deployed frontward in a traveling direction of the vehicle and  
30 is inflated in a space between the body side portion and an  
occupant.

          13. The side airbag apparatus according to claim 11,  
wherein, when the airbag is deployed, the narrow portion is  
35 located below the limited thickness portion and frontward in

the traveling direction of the vehicle with respect to the limited thickness portion.

14. The side airbag apparatus according to claim 13, wherein the narrow portion is arcuate as viewed from a side of the vehicle and has a substantially constant width.

15. The side airbag apparatus according to claim 11, wherein the airbag is provided in a part of a seat portion of the seat that faces the side body portion, and wherein the airbag is deployed upward in the passenger compartment and is inflated in a space between the body side portion and an occupant.

16. The side airbag apparatus according to claim 11, wherein the limited thickness portion is formed by sewing facing portions of the airbag to each other with a reinforcing fabric sheet in between.

17. The side airbag apparatus according to claim 11, wherein the limited thickness portion is one of a plurality of limited thickness portions, wherein the airbag has a plurality of gas passages, and wherein each gas passage is located between an adjacent pair of the limited thickness portions.

18. The side airbag apparatus according to claim 11, wherein the limited thickness portion is circular.

19. The side airbag apparatus according to claim 11, wherein the inflator injects gas in a horizontal direction, and wherein the limited thickness portion is located above or below a mainstream of gas injected by the inflator.